

IN THE CLAIMS

The claims in their present form are set forth below:

1. (Currently Amended) A liquid crystal display device comprising a pair of substrates and a continuous liquid crystal layer provided between the substrates, wherein liquid crystal molecules in the liquid crystal layer have a negative dielectric anisotropy, and the liquid crystal molecules are aligned in a direction substantially vertical to the substrates when no voltage is being applied and axis-symmetrically aligned in each of a plurality of pixel regions under application of a voltage, wherein a thickness (d_{in}) of the liquid crystal layer in the pixel regions is larger than a thickness (d_{out}) of the liquid crystal layer outside of the pixel regions, and the device includes a homeotropic alignment layer in a region corresponding to the pixel regions on a surface of at least one of the substrates on the liquid crystal layer side.
2. (Canceled).
3. (Currently Amended) A liquid crystal display device according to claim 1, wherein at least one of the substrates has convex portions defining the pixel regions on a surface on the liquid crystal layer side.
4. (Currently Amended) A liquid crystal display device according to claim 1, wherein the thickness of the liquid crystal layer in the pixel regions is largest at a central portion of the pixel regions and continuously decreases toward a peripheral portion of each of the pixel regions.

5. (Currently Amended) A liquid crystal display device according to claim 4, wherein the thickness of the liquid crystal layer in the pixel regions is axis-symmetrically changed around the central portion of the pixel region.
6. (Currently Amended) A liquid crystal display device according to claim 1, further comprising a projection at the central portion of the pixel regions, wherein the liquid crystal molecules are axis-symmetrically aligned around the projection under the application of a voltage.
7. (Original) A liquid crystal display device according to claim 1, wherein a retardation $d \cdot \Delta n$ of the liquid crystal layer is in a range of about 300 nm to about 500 nm.
8. (Original) A liquid crystal display device according to claim 1, wherein a twist angle of the liquid crystal layer is in a range of about 45° to about 110° .
9. (Original) A liquid crystal display device according to claim 1, comprising a pair of polarizing plates disposed in crossed Nicols on both sides of the liquid crystal layer, a phase difference plate having a relationship, in which a refractive index $n_{x,y}$ in an in-plane direction is greater than a refractive index n_z in a direction vertical to a plane, being provided on at least one of the polarizing plates.
10. (Original) A liquid crystal display device according to claim 1, wherein an axis-symmetrical alignment fixing layer which provides the liquid crystal molecules with an axis-symmetrical pretilt angle is further formed on a surface of at least one of the substrates on the liquid crystal layer side.
11. (Original) A liquid crystal display device according to claim 10, wherein the axis-symmetrical alignment fixing layer contains a photocurable resin.

12. through 21. (Canceled).

22. (Currently Amended) A liquid crystal display device, comprising:

a pair of substrates and a continuous liquid crystal layer provided between the substrates, wherein an array of pixel regions is between the pair of substrates,

wherein liquid crystal molecules in the liquid crystal layer have a negative dielectric anisotropy, and the liquid crystal molecules are aligned in a direction substantially vertical to the substrates when no driving voltage is being applied and axis-symmetrically aligned around an axis-symmetrical alignment central axis in each of a plurality of pixel regions under application of a driving voltage,

wherein a thickness (d_{in}) of the liquid crystal layer in the pixel regions is larger than a thickness (d_{out}) of the liquid crystal layer outside of the pixel regions, and

a convex portion defining each of the pixel regions is provided on a surface of at least one of the substrates on the liquid crystal layer side, and said convex portion includes a treatment for controlling a position of the axis-symmetrical alignment central axis.

23. (Original) A liquid crystal display device according to claim 22, comprising a region in which the liquid crystal molecules keep a homeotropic alignment state under application of an axis-symmetrical alignment central axis forming voltage at each predetermined position in the plurality of pixel regions.

24. (Allowed) A liquid crystal display device comprising:

a pair of substrates and a liquid crystal layer provided between the substrates,

wherein liquid crystal molecules in the liquid crystal layer have a negative dielectric anisotropy, and the liquid crystal molecules are aligned in a direction substantially vertical to the substrates when no driving voltage is being applied and axis-symmetrically aligned around an axis-symmetrical alignment central axis in each of a plurality of pixel regions under application of a driving voltage, and

a convex portion defining each of the pixel regions is provided on a surface of at least one of the substrates on the liquid crystal layer side, and said convex portion includes a treatment for controlling a position of the axis-symmetrical alignment central axis, and

each pixel region includes an Sa region in which the liquid crystal molecules keep a homeotropic alignment state under application of an axis-symmetrical alignment central axis forming voltage,

wherein the Sa region is an area of the pixel region in which the liquid crystal molecules keep a homeotropic alignment state under the application of the axis-symmetrical alignment central axis forming voltage, A is an area of the pixel region, and Sa/A satisfies the relationship $0 < Sa/A < 4\%$.

25. (Currently Amended) A liquid crystal display device according to claim ~~25~~ 24, wherein Sb is an area of the axis-symmetrical alignment central axis forming portion, A is an area of the pixel region, and Sb/A satisfies the relationship $0 < Sb/A < 4\%$.

26. (Allowed) A liquid crystal display device comprising:

a pair of substrates and a liquid crystal layer provided between the substrates,

wherein liquid crystal molecules in the liquid crystal layer have a negative dielectric anisotropy, and the liquid crystal molecules are aligned in a direction substantially vertical to the substrates when no driving voltage is being applied and axis-symmetrically aligned around an axis-symmetrical alignment central axis in each of a plurality of pixel regions under application of a driving voltage,

convex portions defining the pixel region are provided on a surface of at least one of the substrates on the liquid crystal layer side, and a treatment for controlling a position of the axis-symmetrical alignment central axis is conducted,

each pixel region includes an Sb region in which the liquid crystal molecules keep a homeotropic alignment state under application of an axis-symmetrical alignment central axis forming voltage at each predetermined position, and

an axis-symmetrical alignment central axis forming portion at a predetermined position in each of the plurality of pixel regions, and the axis-symmetrical alignment central axis of the liquid crystal molecules corresponds to the axis-symmetrical alignment central axis forming portion,

wherein the Sb region is an area aligned with the axis-symmetrical alignment central axis forming portion, A is an area of the pixel region, and Sb/A satisfies the relationship $0 < Sb/A < 4\%$.

27. (Currently Amended) A liquid crystal display device according to claim 22, wherein a thickness of the liquid crystal layer in the pixel region is larger than a thickness of the liquid crystal layer outside of the pixel region, thickest at a center of each of the pixel regions and thinnest at an outer periphery of the pixel regions.

28. (Currently Amended) A liquid crystal display device according to claim 27, wherein the thickness of the liquid crystal layer in each of the pixel regions is largest at a central portion of each of the pixel regions and continuously decreases from the central portion to a peripheral portion of the pixel regions.

29. (Currently Amended) A liquid crystal display device according to claim 28, wherein the thickness of the liquid crystal layer in the pixel regions is axis-symmetrically changed around the central portion of the pixel regions.

30. (Original) A liquid crystal display device according to claim 22, wherein an axis-symmetrical alignment fixing layer is provided on a surface of at least one of the substrates on the liquid crystal layer side.

31. (Original) A liquid crystal display device according to claim 30, wherein the axis-symmetrical alignment fixing layer contains a photocurable resin.

32. through 36. (Canceled).